

INDIANA STATE DEPARTMENT OF HEALTH

2010 Firework-Related Injury Report

Through the passage of House Enrolled Act 1131, the Indiana State Department of Health (ISDH) received reports about injuries resulting from fireworks and/or pyrotechnics during 2003 and 2004. However, no reporting occurred in 2005 due to the expiration of this law. With the passage of Public Law 187 in 2006, reporting of firework-related injuries was reinstated with identical reporting requirements to those in the previous statute. All hospitals, medical facilities, and private medical practices are mandated by law to report all firework injuries and deaths to ISDH. This report presents firework-related injury data compiled from submitted firework reporting forms for 2010.

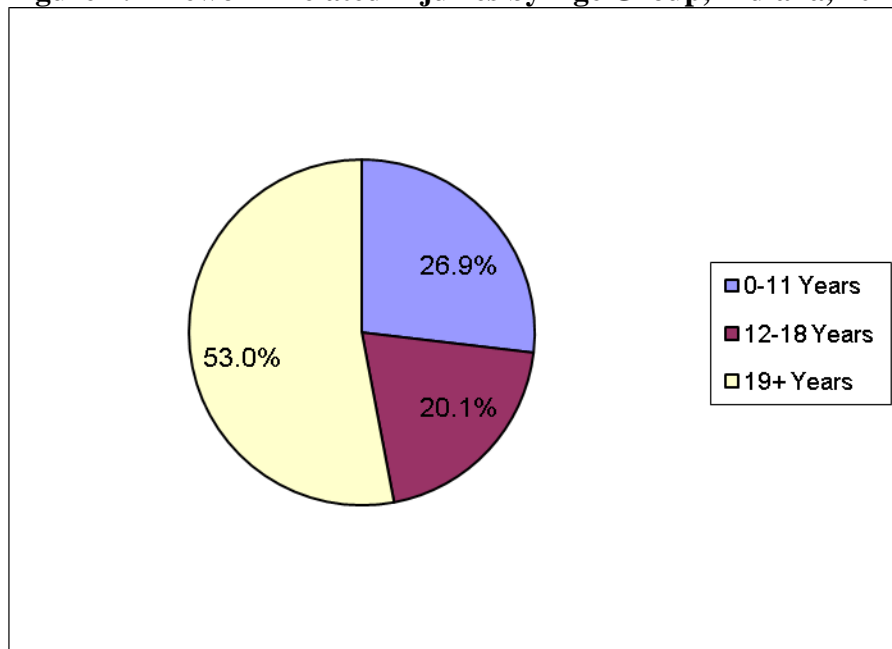
Highlights for 2010

- As of August 2, 2010, 134 unduplicated cases of firework-related injuries were reported to ISDH.
- Almost half (47.0%, 63/134) of all reported firework-related injuries involved children and adolescents (individuals 18 years of age and under), who represent 25% of Indiana's population (US Census Bureau, 2009).
- Sixty-two percent (99/159) of firework-related injuries were burns, with the hand or fingers being the most affected body part.
- Over four percent (4.5%, 6/134) of injured persons were hospitalized, and 11.9% (16/134) were transferred to a different hospital.
- One out of every six (17.0%, 33/194) reported injuries involved the eyes, with 54.5% (18/33) of those with eye injuries not using any method of eye protection (if known; 36.4% was unknown) such as glasses.
- Over half of the injuries (53.3%, 72/135) were caused by firecrackers, rockets, and aerials.
- Malfunction and mishandling of fireworks accounted for 51.8% (73/141) of reported problems causing injury.
- Firework use on private property accounted for 79.1% (106/134) of reported injuries.

Demographics

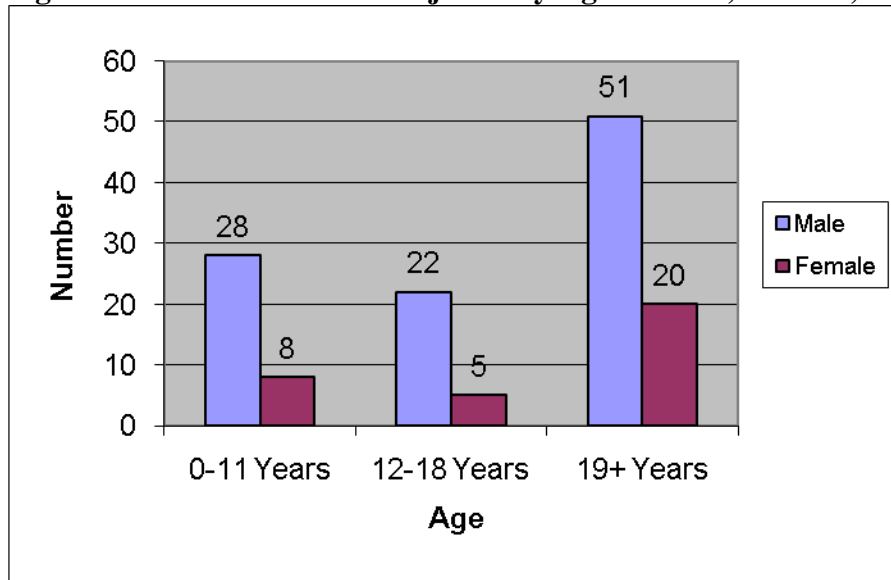
- The median age of persons with a firework-related injury was 20 years. The average age of all injured persons was 22.6 years with an age range from 0 to 69 years.
- Forty-seven percent (63/134) of those injured were 18 years of age or younger (Figure 1).
- Of reported injuries, 75.4% (101/134) involved males, and 24.6% (33/134) involved females. Across all age groups, males reported more firework-related injuries than females (Figure 2).
- Over seventy percent (73.1%, 98/134) of persons injured were white, 15.7% (21/134) were black, and two (1.5%) was multiracial (Figure 3). Race was unknown or marked as “other” for 9.7% (13/134) of the cases. Over seven percent (7.5%, 10/134) reported Hispanic ethnicity.

Figure 1: Firework-Related Injuries by Age Group, Indiana, 2010



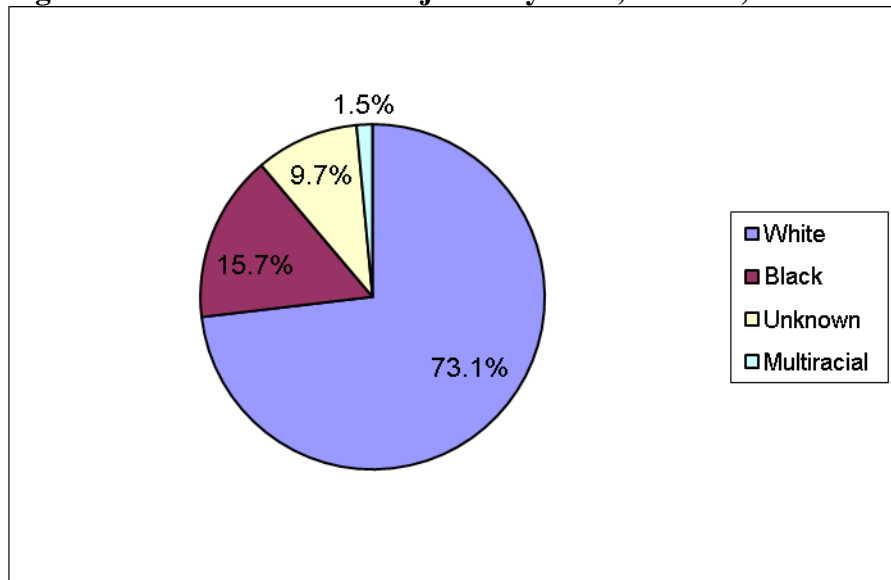
Source: Indiana State Department of Health, Injury Prevention Program

Figure 2: Firework-Related Injuries by Age and Sex, Indiana, 2010



Source: Indiana State Department of Health, Injury Prevention Program

Figure 3: Firework-Related Injuries by Race, Indiana, 2010

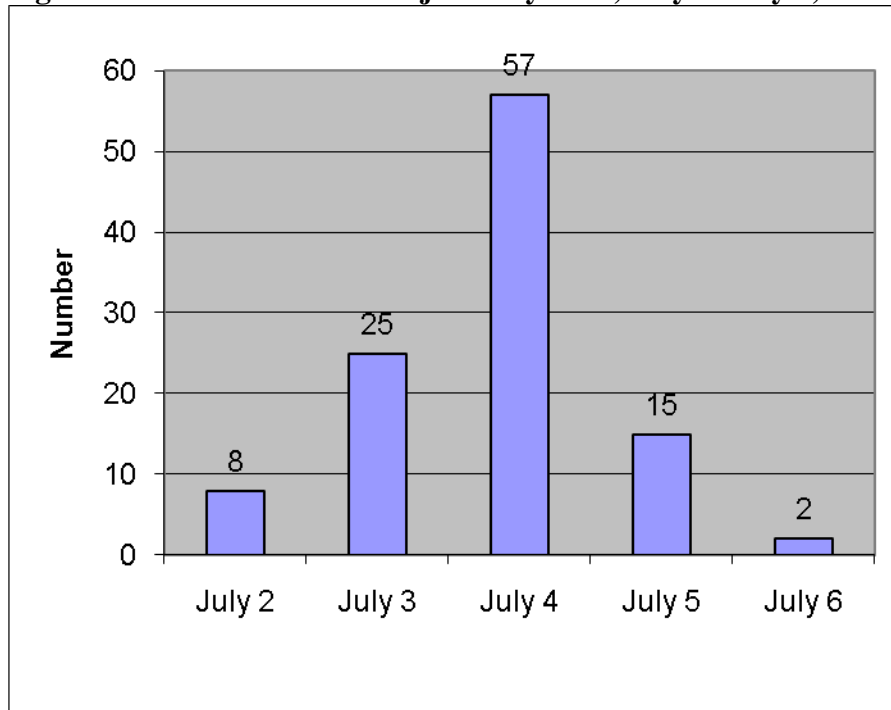


Source: Indiana State Department of Health, Injury Prevention Program

Date and Time of Injuries

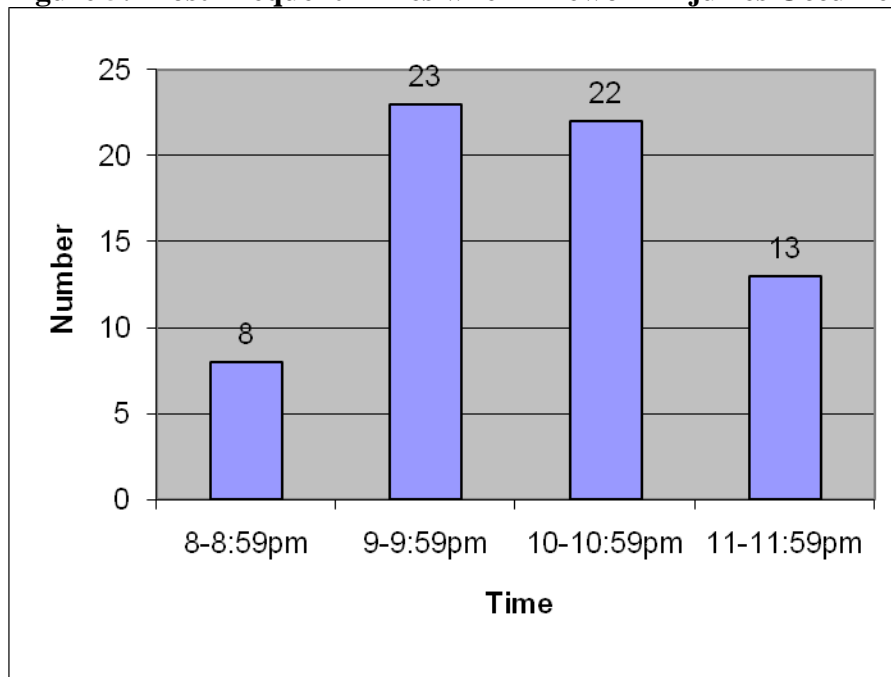
- Over three-quarters (80.0%, 107/134) of all reported injuries occurred between July 2 and July 6, 2010 (Figure 4). Over one-third (42.5%, 57/134) of injuries occurred on July 4, 2010.
- Sixty percent (80/134) of all injuries occurred between 8pm and midnight (14 reports only indicated pm, but the assumption was made that it was between 8pm and midnight) with 68.2% (45/66 [reports with specific times]) of those occurring between 9-11pm (Figure 5).

Figure 4: Firework-Related Injuries by Date, July 2–July 6, Indiana, 2010



Source: Indiana State Department of Health, Injury Prevention Program

Figure 5: Most Frequent Times when Firework Injuries Occurred, Indiana, 2010



Source: Indiana State Department of Health, Injury Prevention Program

Type of Fireworks Involved in Injuries

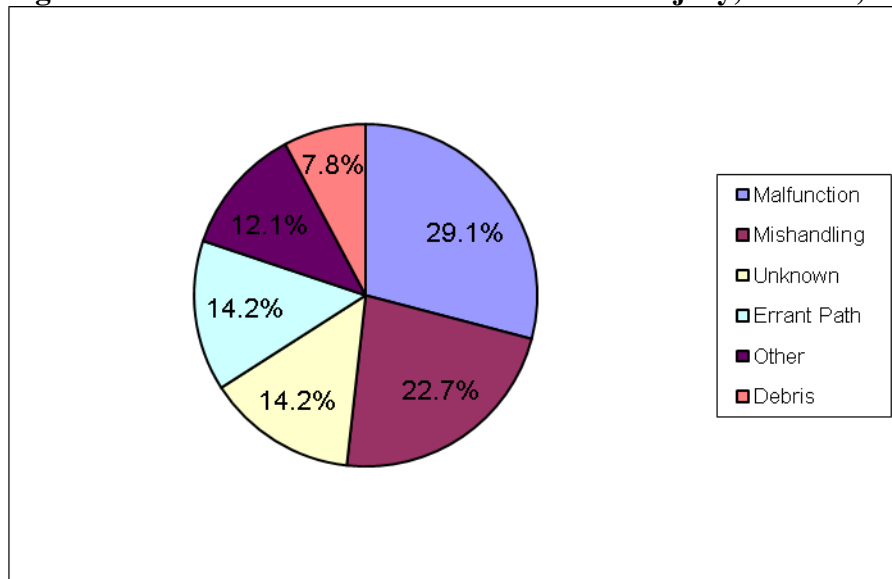
- The 134 individuals were injured by 138 fireworks, as four individuals were injured by more than one type of firework.
- Rockets, firecrackers, and aerial devices accounted for 52.2% (72/138) of the types of fireworks most cited causing injury (Table 1).
- Malfunction and mishandling of fireworks accounted for 51.8% (73/141) of reported problems causing injury (Figure 6).

Table 1: Frequency and Percent of Firework Type Involved in Injury, Indiana, 2010

Firework Type	Frequency	Percent
Rockets	29	21.5%
Other, Specified	26	19.3%
Firecrackers	22	16.3%
Aerial	21	15.6%
Sparkler	18	13.3%
Unknown	10	7.4%
Twisters	4	3.0%
Roman Candle	3	2.2%
Gunpowder	3	2.2%
Homemade fireworks	1	0.74%
Pyrotechnics	1	0.74%
Total	135	100.0%

Source: Indiana State Department of Health, Injury Prevention Program

Figure 6: Problem/Cause of Firework-Related Injury, Indiana, 2010

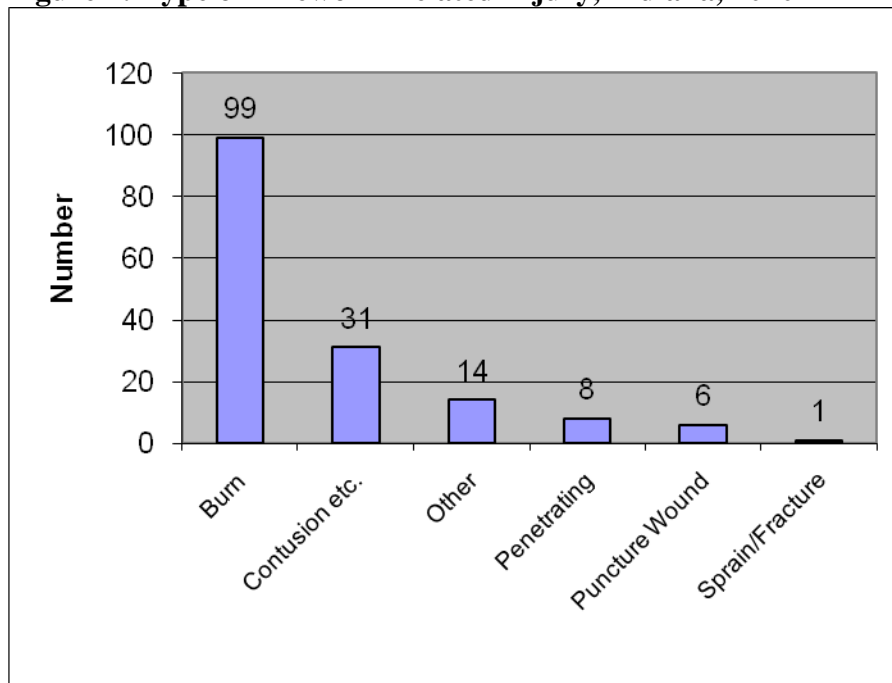


Source: Indiana State Department of Health, Injury Prevention Program

Type of Injuries

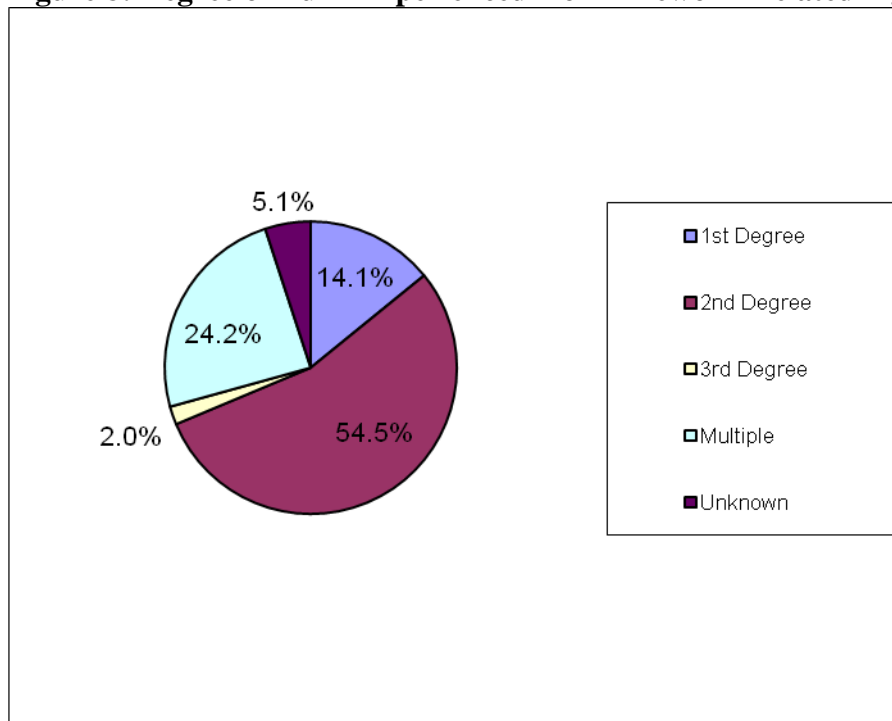
- Fifteen percent (20/134) of those injured reported having multiple injuries; resulting in a total of 159 injuries occurring to 134 individuals.
There were 99 burn injuries (62.3%) reported (Figure 7). Of these, 54.5 % (54/99) were second-degree, and 14.1% (14/99) were first-degree. Almost twenty-five percent (24.2%, 24/99) of burns were multiple degrees (Figure 8).
- Other types of injuries included contusions/lacerations/abrasions (19.5%, 31/159), penetrating foreign body/missiles (5.0%, 8/159), sprains/fractures (0.6%, 1/159), and puncture wounds (3.8%, 6/159) (Figure 7).

Figure 7: Type of Firework-Related Injury, Indiana, 2010



Source: Indiana State Department of Health, Injury Prevention Program

Figure 8: Degree of Burn Experienced from Firework-Related Injury, Indiana, 2010

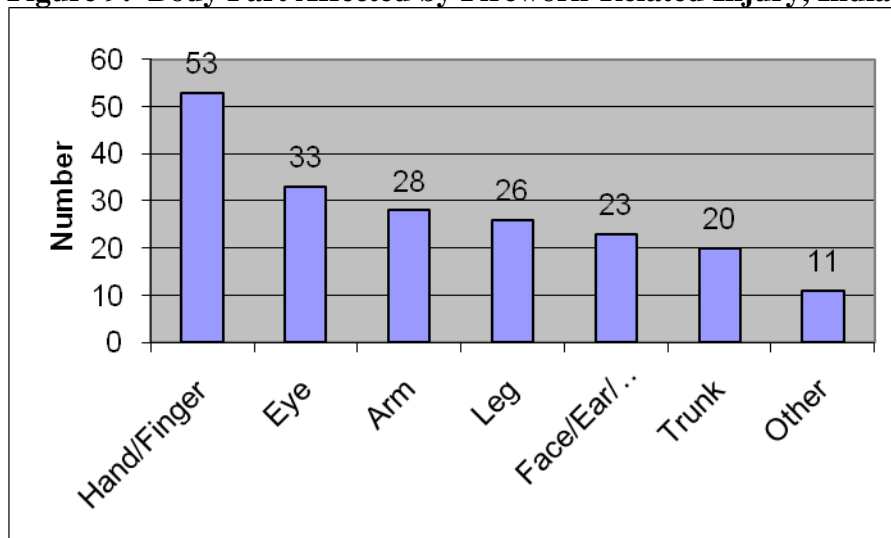


Source: Indiana State Department of Health, Injury Prevention Program

Body Part Injured

- There were 194 body parts injured, with 40 individuals (29.9%) experiencing injury to multiple areas of their body.
- Over half (58.8%, 114/194) of the injuries involved the hands/fingers, eyes or arms (Figure 9). Injuries to the face, ears, and head accounted for 11.9% (23/194), and injuries to the leg accounted for 13.4% (26/194).
- Of those who had eye injuries, only 9.1% (3/33) had some sort of eye protection (i.e. glasses or contact lenses). Eye protection was not used in 54.5% (18/33) of the cases, and information was unknown for 36.4% (12/33) of the cases.

Figure 9: Body Part Affected by Firework-Related Injury, Indiana, 2010



Source: Indiana State Department of Health, Injury Prevention Program

Source of Care and Outcome of Injury

- The majority (83.6%, 112/134) of people injured by fireworks sought care at an emergency department. The remaining cases (16.4%, 22/134) sought care by another type of provider.
- Over eighty percent (82.1%, 110/134) of those seeking treatment were evaluated and released to go home. However, 16.4 % (22/134) were admitted to the hospital or transferred to another hospital and two patient's outcomes were unknown.

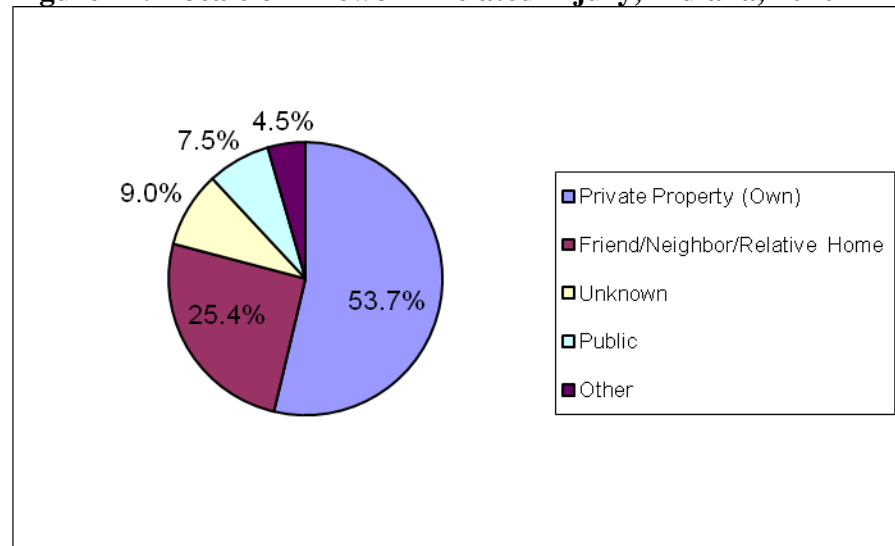
Other Information

- Over fifty percent (53.7%, 72/134) of people were injured at their own private home, yard, or property, while 25.4% (34/134) were injured at someone else's home, yard, or property (Figure 12). Public property was noted for 7.5% (10/134) of people injured. Six people

reported the injury occurring somewhere else (unspecified), and information was unknown for 10 people.

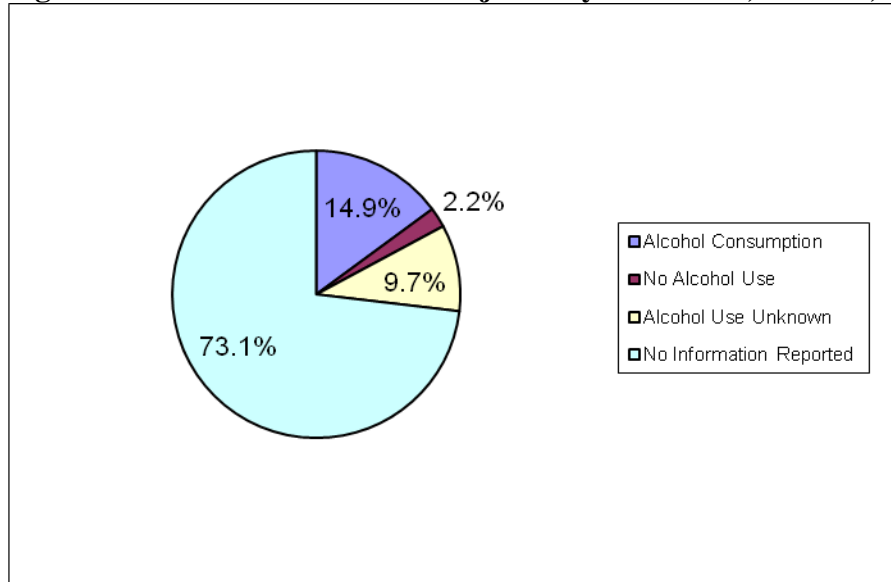
- Of injured persons, 12.7% (17/134) indicated they were bystanders. Children and adolescents under 18 years of age made up 52.9% (9/17) of the bystanders injured by fireworks.
- Over eighty percent (82.8%, 111/134) of all reports did not provide information (98/134) on alcohol consumption or that information was unknown (13/134) (Figure 13). Alcohol use was reported in 14.9% (20/134) of cases with 55.0% (11/20) of those cases reporting alcohol use within three hours of injury. Of those using alcohol, 10.0% (2/20) were under 21 years of age. Three people (2.2%) indicated that no alcohol was consumed prior to the injury.
- Among those injured who were 18 years of age or less, 57.1% (36/63) were injured while in the presence of an adult, and 19.0% (12/63) had no adult supervision. For 23.8% (15/63) of cases, the information was either unknown or was not reported (Figure 14).

Figure 12: Locale of Firework-Related Injury, Indiana, 2010



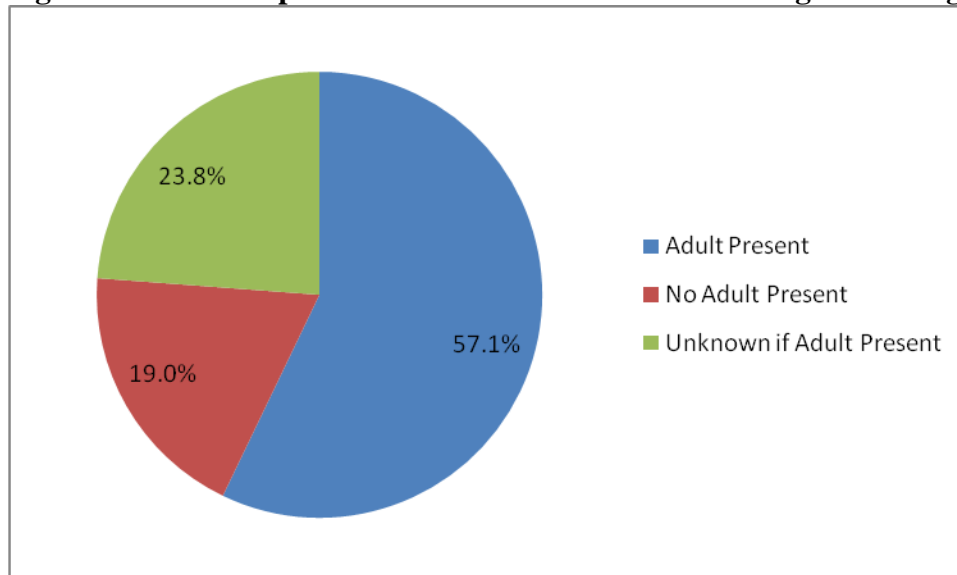
Source: Indiana State Department of Health, Injury Prevention Program

Figure 13: Alcohol Use of Those Injured by Fireworks, Indiana, 2010



Source: Indiana State Department of Health, Injury Prevention Program

Figure 14: Adult Supervision of Individuals 18 Years of Age or Younger, Indiana, 2010



Source: Indiana State Department of Health, Injury Prevention Program

Summary of Firework-Related Injuries for 2010

While the ages of those injured ranged from 1 to 69 years, children and adolescents comprised almost half (47.0%, 63/134) of reported cases. Of those 18 years of age or less, 57.1% (36/63) were injured while in the presence of an adult, and 19.0% (12/63) had no adult supervision. Males (75.4%, 101/134) were injured more often than females (24.6%, 33/134). Almost three-quarters (73.1%, 98/134) of the cases were white, 15.7% (21/134) were black, two cases (1.5%) was multiracial and thirteen cases were unknown (9.7%).

Over half (58.8%, 114/194) of the injuries involved the hands/fingers, eyes or arms. Burns were the most common type of injury. The majority (83.6%, 112/134) of people injured by fireworks sought care at an emergency department, with the remaining cases (16.4%, 22/134) seeking medical care from another type of provider. Of those seeking medical care, 82.1% (110/134) were evaluated and released to go home. However, 16.4 % (22/134) were admitted to the hospital or transferred to another hospital.

For the 134 cases of firework-related injuries, 79.9% (107/134) occurred between July 2 and July 6 with 42.5% (57/134) of injuries taking place on July 4. Over half (53.7%, 72/134) of injuries occurred on private property. Firecrackers, rockets, and aerials (53.3%, 72/135) were cited most often as being involved in firework injuries. The cause of injury was most commonly malfunction and mishandling (51.8%, 73/141) of fireworks.

APPENDIX

Firework-Related Injury Year Comparisons

The Indiana State Department of Health began receiving firework injury reports in 2003 after the collection of this information was mandated by law. After two years the law expired and no reports were collected in 2005. In 2006, the law was reinstated with requirements identical to the previous law. Table 2 shows the comparison of firework-related injuries for the years in which reporting was mandated (2003, 2004, 2006, 2007, 2008, 2009, and 2010).

Table 2: Comparison of Firework-Related Injuries, Indiana, 2003-2004 and 2006-2010

Category	2003	2004	2006	2007	2008	2009	2010
Number of cases reported	261	233	251	156	141	116	134
Demographics							
Median Age	18	18	17	20	21	19	20
Age Range	0-74 yrs	0-72 yrs	0-67 yrs	0-70 yrs	0-70 yrs	0-81yrs	1-69yrs
Children/Adolescents	53%	52%	55%	48%	50%	50%	47%
Males	73%	76%	70%	67%	70%	72%	75%
Females	27%	24%	30%	33%	30%	28%	25%
White	84%	87%	82%	87%	73%	82%	73%
Black or African American	10%	8%	13%	7%	14%	7%	16%
Injury Type							
Burns	76%	67%	73%	69%	65%	61%	62%
Body Part Injured							
Hand	34%	32%	36%	41%	33%	37%	27%
Eye	17%	25%	29%	24%	21%	16%	17%
Cases with No Eye Protection	82%	88%	97%	92%	76%	91%	91%
Injury Circumstances							
Injured on Private Property	83%	89%	86%	83%	87%	84%	79%
Children Injured with Adults Present	60%	50%	64%	61%	62%	41.4%	57%
Received Specialized Care for Burn or Eye Injuries	8%	19%	12%	4%	2%	4%	2%
Hospitalized or Transferred to a Hospital	3%	6%	11%	8%	9%	10%	14%
Died	0%	0%	0%	0%	1%	0%	0%
Fireworks Circumstances							
Injuries from Sparklers, Rockets, and Firecrackers	63%	64%	57%	52%	53%	52%	51%
Injuries from Mishandling Fireworks	27%	23%	29%	30%	28%	24%	23%
Errant Path or Malfunctioning Fireworks	21%	37%	41%	35%	40%	41%	43%

Source: Indiana State Department of Health, Injury Prevention Program

